Sewage Handling

Environmental Concerns

Pollutants tend to concentrate within the sheltered environment of marina basins, making the illegal discharge of untreated sewage from boats a water quality and public health concern. The nutrients found in sewage can result in excessive algae and underwater plant growth within the marina basin. In severe cases, the decomposition of raw sewage may result in a large die-off of fish, known as fish kills. As the sewage is broken down by bacteria, the bacteria consume oxygen from the water—the same oxygen required for the survival of the fish. Additionally, raw sewage contains disease-causing bacteria and viruses that are a threat to swimmers and others coming into direct contact with the water. Every year there are a number of beach closures in Illinois due to elevated *E. coli* bacteria levels, which is an indicator of sewage contamination.

Boats release relatively small amounts of sewage compared to municipal sewer overflows. However, the concentration of the sewage from boats can be much higher because marine toilets use little or no water.

Laws and Permits

Marine Sanitation Devices

The Federal Clean Water Act (33 U.S.C. 1322) requires that all vessels with installed toilets have a U.S. Coast Guard-certified marine sanitation device (MSD). Type I and II MSDs are used to pretreat boat sewage before it is discharged. Type I systems mechanically cut solids and disinfect waste, and Type II systems treat sewage to a higher standard and generally require more space and energy to run. Both Type I and II MSDs must have a secured Y-valve to allow waste to enter an on-board holding tank for future drainage at a pump-out station. Type III MSDs are holding tanks and do not discharge sewage. Type III MSDs must be pumped out ashore at a proper facility and cannot be discharged overboard.

Portable toilets are not considered installed toilets. As a result, MSD requirements do not apply to vessels with portable toilets. Portable toilets should be properly emptied on shore. It is illegal to discharge sewage into state waterways (625 ILCS 45/4-9). Most pump-out facilities have wand attachments to empty portable toilets, and some marinas have portable toilet dump stations.

Pump-Out Stations and Restrooms

Any marina where boats equipped with toilets are allowed to

dock in recreational areas must provide pump-out stations. Marinas are also required to provide both male and female restrooms if boaters are allowed to sleep overnight while at dock (77 IAC 800.1300).

Best Management Practices for Handling Sewage

Prohibit Discharge at the Slip or Mooring

Effluent from Type I and Type II systems contains nutrients and potentially toxic chemicals, and probably pathogens. Discharges from Type I and Type II systems in crowded, enclosed areas such as marinas pose a threat to human health and water quality.

- ✓ Prohibit discharge of sewage in your marina as a condition of your lease agreement (625 ILCS 45/4-9). State that failure to comply with MSD laws and marina policy will result in expulsion from the marina and forfeiture of fees.
- ✓ Include information about MSD requirements and sewage laws in contracts for slips, rentals, transients, and live-aboards.
- ✓ Follow these procedures if a customer fails to observe the law or honor your contract:
  - Discuss the matter with him or her.
  - Mail a written notice asking that the offending practice stop immediately and keep a copy for your records.
  - Evict the boater.
- ✓ Report any illegal discharge of raw sewage to the Illinois Department of Natural Resources (IDNR). Provide as much information as possible—name of the owner, vessel, location, etc.
- ✓ Require boaters to keep Y-valves on head discharge lines closed and locked to prevent illegal discharge.
- ✓ Discourage the discharge of graywater in your marina as a condition of your lease agreements. See the Handle Graywater Properly section later in this chapter for more information.
- ✓ Post signs prohibiting the discharge of head waste, discouraging the discharge of graywater, and directing people to use shoreside restrooms and dishwashing areas.

Offer MSD Inspections

- ✓ Offer to inspect boaters' MSDs annually to ensure that their Y-valves are secured.
- ✓ Encourage boaters to run dye tablets through their Type I

and II systems outside of the marina. If a system is operating properly, no dye will be visible. Maintenance is required if dye can be seen in the discharge.

Install a Pump-Out System

Contact IDNR at (217) 782-2602 for information about receiving up to $12,500 in grant funding to install a pump-out system. Any public or private marina is eligible for Clean Vessel Act (CVA) Program grants, which can be used for the construction, renovation, operation, and maintenance of pump-out and dump stations.

- ✓ Install pump-out facilities and dump stations meet the marina's needs. Ask the manufacturer for a written assurance that their system will operate effectively within the specific conditions at your marina. There are three types of onshore sewage collection systems:
  - Fixed-point systems are stationary systems that require boats to move to the pump-out station.
  - Portable systems can be used wherever a boat is located when it needs service. These are good for smaller marinas, especially those that offer limited maneuverability within the marina. However, these systems require more hands-on cleaning and still require marinas to have a fixed system where portable systems can be pumped out.
  - Dedicated slip-side systems provide continuous wastewater collection at select slips within a marina. These systems are good for serving live-aboard vessels.
- ✓ Locate fixed-point systems at a central location and where they can be easily accessed by boats.
- ✓ Provide portable toilet dump stations near small boat slips and boat ramps.
- ✓ Ensure that boats using pump-out systems do not prevent another boat from fueling.
- ✓ Avoid installing a pump-out system where stormwater runoff can come in contact with equipment.
- ✓ Post signs with information about the use and cost of the pump-out station, hours of operation, and where to call for service if the system is out of order. Be careful how signs are worded to avoid confusion between sewage pump-out, bilge pump-out, and fuel pump stations. "Sewage Pump-Out" or "Sewage Dump Station" are recommended identifiers.
- ✓ Ensure signs are visible from the channel so that passing boats are aware of the facility.

- ✓ Make sure public sewage pump-out stations are identified in maps, boating publications, and other boating resources for your marina.
- ✓ Consider having an attendant operate the pump-out. Install a buzzer or paging system so boaters at the pump-out station can easily locate the attendant.
- ✓ Train employees to take precautions to avoid coming into direct contact with sewage. Require that employees wear rubber gloves during pumping and respirators when maintaining or repairing MSDs.
- ✓ Decide whether to charge a fee and whether live-aboards will be charged as well. No more than $5 may be charged if CVA grant funds were accepted for the purchase or installation of the system. Make arrangements to collect a fee from unattended stations.
- ✓ Consider providing a free pump-out with a fuel fill-up.
- ✓ Keep the pump running until it has been rinsed with clean water. Do not allow rinse water or residual waste in the hoses to drain into receiving waters.
- ✓ Dispose of collected waste by connecting directly to the public sewer line. If a sewer line is not available in your area, you will need a holding tank. Holding tank size and location is generally determined by the local health department.
- ✓ Pump out holding tanks periodically and transport the contents to a treatment plant.
- ✓ Inspect the system regularly and keep a log of your observations.
- ✓ Test the efficiency of the pump weekly during the boating season by measuring the length of time required for the system to empty a 5-gallon bucket of water.
- ✓ Keep a variety of nozzles in stock to replace broken ones.
- ✓ Establish a maintenance agreement with a contractor qualified to service and repair pump-out facilities.
- ✓ Contact the pump-out manufacturer for specific maintenance and winterization recommendations.

Provide Shoreside Restrooms

- ✓ Provide clean, functional restrooms to encourage people not to use their heads while in port.
- ✓ Make restrooms available 24 hours a day.

- ✓ Ensure that the dock and route to the restrooms are well lit at night.
- ✓ Install a security system on restroom doors so people will feel safe, particularly at night.
- ✓ Provide air conditioning and heating in the restrooms.

Provide Facilities for Live-Aboards

- ✓ Require that live-aboards place dye tablets in holding tanks to make any discharge clearly visible as a condition of the lease agreement.
- ✓ Reserve slips closest to shoreside restrooms for live-aboards.
- ✓ Provide a portable pump-out system or require that live-aboards contract with a mobile pump-out service.
- ✓ Consider installing direct sewer hookups for live-aboards. Keep in mind that most live-aboards expect and are willing to pay a premium for extra service and more convenient slips.
- ✓ Offer to demonstrate the proper way to secure the Y-valve.

Maintain Septic Systems

- ✓ Watch for signs of septic failure, such as wet areas, standing water above the drain field, toilets that run slowly or back up, and odor. Septic failures can contaminate drinking water and threaten public health.
- ✓ Post signs in the restrooms requesting that patrons not place paper towels, tissues, cigarette butts, disposable diapers, sanitary napkins, or tampons in the toilet. These items can clog the septic system.
- ✓ Provide adequate covered disposal for items that cannot be flushed down the toilet.
- ✓ Post signs in the laundry room requesting that patrons use minimal amounts of detergents and bleaches.
- ✓ Prohibit personnel and customers from dumping pesticides, solvents, and other harsh chemicals, fats, and oils down the drain.
- ✓ Post signs explaining what materials cannot be poured down the drain.
- ✓ Use small amounts of drain cleaners, household cleaners, and other products that can damage the system.
- ✓ Do not use septic system additives, such as "starter

enzyme" or yeast. These products can damage the system by causing the infiltration bed to become clogged with solids that have been flushed from the septic tank.

- ✓ Hire a licensed professional to pump the septic tank every 2-3 years.
- ✓ Direct downspouts and runoff away from the septic field to avoid saturating the area with excess water. Be careful not to direct the flow or runoff toward paved areas.
- ✓ Prohibit driving on or parking over the infiltration area to prevent soil from being compacted.

Handle Graywater Properly

Graywater is wastewater from the sink and shower that may contain detergents, soap, other chemicals, and food wastes. When it is released into the environment, it can pollute water, promote algae growth, and reduce oxygen levels as bacteria break down wastes and algae.

- ✓ Encourage boaters to use the showers and restrooms provided by the marina when docked.
- ✓ Discourage boaters from using dish soaps to clean dishes on board their boats. Recommend environmentally-friendly soaps in moderation when soap is necessary for hard-to-clean jobs.
- ✓ Sell only low-phosphorus detergents and biodegradable soaps and shampoos in your store.
- ✓ Consider providing shoreside dishwashing and coin-operated laundry facilities for boaters and encourage their use.
- ✓ Educate boaters about the effects of graywater and the steps they can take to help reduce them.

Manage Pet Waste and Wildlife

- ✓ Provide a grassy area away from the shoreline and storm drains for pets to be taken for walks.
- ✓ Install fences and provide park benches to encourage owners to use the space.
- ✓ Require owners to clean up after their pets.
- ✓ Provide a supply of pet waste cleanup bags and a refuse container with a lid on it.
- ✓ Educate your patrons about the problems posed by pet waste.
- ✓ Prohibit personnel and customers from feeding wild birds,

including ducks, geese, and seagulls. This encourages birds to flock to the marina, where their waste can contaminate water and create a mess on boats and walkways.

- ✓ Control wild bird populations if they become established at your marina. For information on reduction measures, visit icwdm.org. Some options include:
  - Fencing to restrict access to water and grazing areas
  - Chemical repellents
  - Scare devices (both visual and sound)
  - Habitat alterations
  - Reproductive control (requires permits)
  - Trained border collies

Educate Boaters

As the generators and conveyors of sewage, boaters need to be educated about the effects of sewage and its proper disposal.

- ✓ Photocopy the Wastewater Containment and Disposal tip sheet from the back of this manual and distribute it to your customers.
- ✓ Encourage boaters to maintain their MSDs properly and to purchase environmentally-friendly treatment products for their heads and holding tanks
- ✓ Post signs directing boaters to the closest public pump-out if you do not have a pump-out system.

References

Miller, Thomas H. and Paula A. Eubanks. 1993. Septic Records and Maintenance Guidelines. College Park, MD: University of Maryland Cooperative Extension Service.